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Vaginal Hysterectomy.

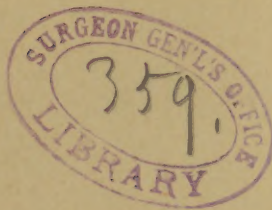
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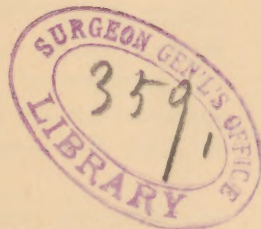


PRESSURE FORCEPS

VERSUS

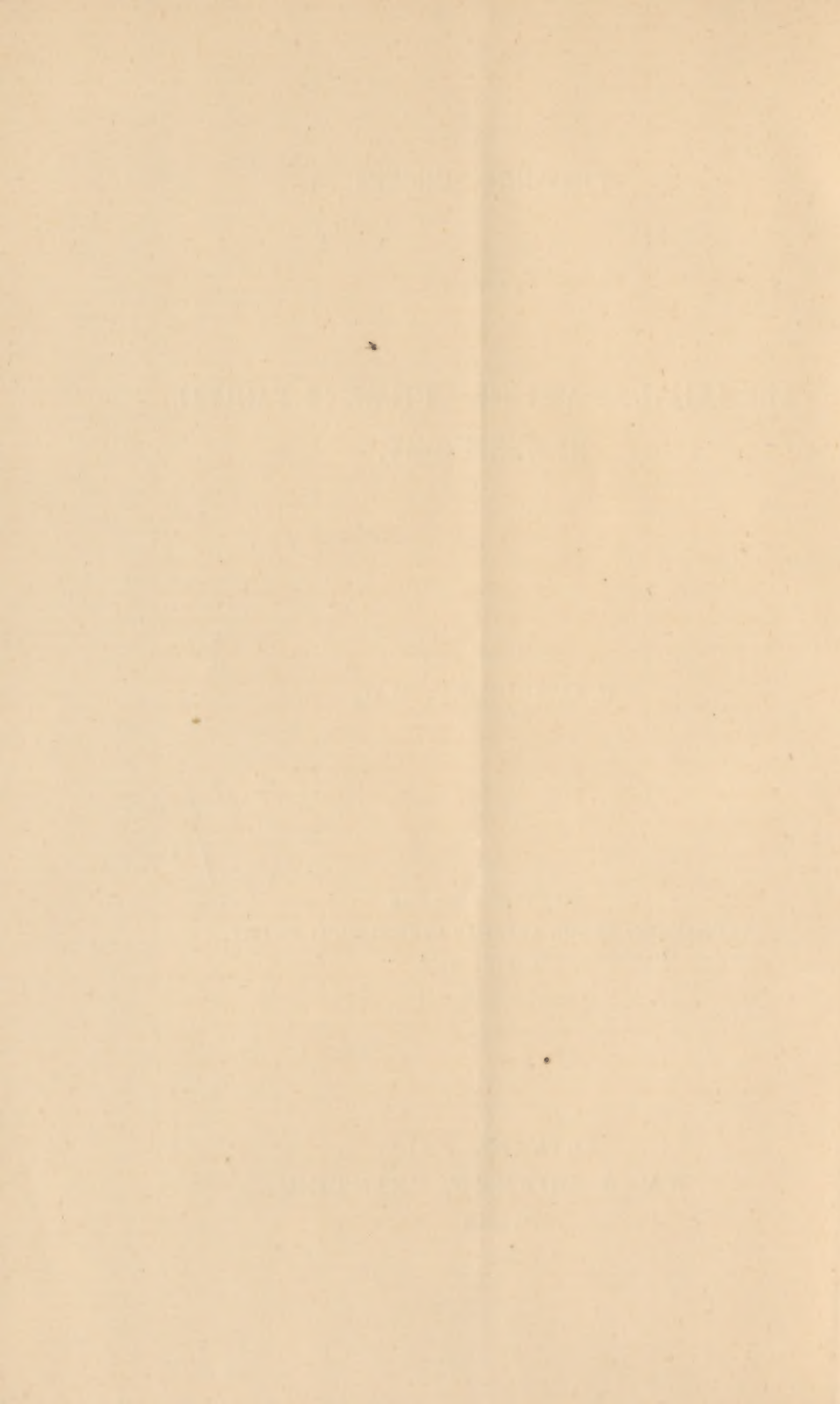
THE LIGATURE AND THE SUTURE IN VAGINAL HYSTERECTOMY.

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PRESSURE FORCEPS *VERSUS* THE LIGATURE AND THE SUTURE IN VAGINAL HYSTERECTOMY.

BY E. C. DUDLEY, M.D.,
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TOTAL extirpation of the uterus has been performed so frequently during the past ten years, and the scientific character of its strongest advocates is of such high standing, that the question for consideration becomes, not so much whether the operation is justifiable, as what particular method of operation gives the best results. Until 1879, when the operation was revived in Germany, it was regarded by the whole profession as one of the most fatal in the entire field of surgery. The mortality prior to 1884, according to Mundé,¹ was 28 per cent. From 1881 to 1886 inclusive the combined statistics of Fritsch, Leopold, Ohlshausen, Schroeder (Hofmeier), Staude, and A. Martin comprise 311 cases, with 15.1 per cent. mortality.²

The mortality, therefore, under reasonably favorable conditions may be placed at about 15 per cent., a very favorable showing for an operation which only nine years ago was scarcely thought of except as a marvel of surgical audacity. Yet better than this, we have Leopold's record of 48 cases with a mortality of 6.2 per cent,³ and, best of all, that of Klotz, 17 cases with no mortality whatever.⁴

¹ Transactions American Gynecological Society, 1884.

² Transactions Ninth International Medical Congress; Annals of Gynecology November, 1887.

³ Archiv für Gynäkologie, B. 30, p. 401.

⁴ Medical and Surgical Reporter, Philadelphia, March 9, 1885.

But the possibility of today becomes the commonplace of tomorrow. The extraordinary results of Leopold and Klotz, therefore, may cease to be extraordinary as soon as the casualties incident to an unsettled technique can be avoided. We have in vaginal hysterectomy conditions of safety which do not pertain to abdominal section. The hand is not introduced into the abdominal cavity; the abdominal and pelvic viscera are very little exposed or disturbed; the wound is in a dependent position where the blood and secretions may gravitate and be discharged through a natural drainage-tube, the vagina. But certain difficulties must be overcome before the mortality of this operation can be reduced to the minimum. These difficulties are:

1. The great length of the operation.
2. Imperfect hemostasis.

The ligature, which is the means of hemostasis generally employed, is difficult to apply, is the chief factor in the duration of the operation and, as many a death from hemorrhage gives evidence, is unreliable. A reliable means of hemostasis, therefore, which could be quickly applied, would overcome both of these difficulties. Such a means of hemostasis is that practised by Péan, Richelot, and others, who dispense entirely with the ligature and control hemorrhage by means of pressure forceps.

The technique of the operation is as follows: The patient is placed in the lithotomy position, with the shoulders somewhat higher than the pelvis, in order that fluids may not gravitate toward the diaphragm, and a Simon's speculum introduced. The cervix is seized with strong vulsellum forceps, drawn down to the vulva, and a free incision is made through the vaginal mucous membrane with scissors, entirely around the cervix, at a safe distance from the diseased tissue. The loose tissues surrounding the cervix are now torn away from it by means of the finger or a blunt instrument, keeping as close to the uterus as the disease will permit, all troublesome hemorrhage being controlled by ordinary pressure for-

ceps. By this means the circum-uterine structures may be stripped back from the uterus until the exposure of the cervix is measured by a zone about three-quarters of an inch wide, extending to the lower margin of the broad ligament on either side. The uterus can now be drawn down much lower, and the dangerous territory of the ureters (which lie very close to the cervix, antero-laterally) will be more easily avoided in the subsequent steps of the operation. Then in the same manner the post-cervical structures are further separated from the cervix until the cul-de-sac of Douglas is reached. With the two index fingers in the cul-de-sac this opening may be easily enlarged by tearing laterally until it extends to the region of the broad ligament on either side. As soon as the opening has been made, two or three soft sponges, wrung out of hot water, should be forced into the pelvic cavity. They protect the pelvic viscera from exposure and accidental injury during the remainder of the operation, absorb the blood, and thereby prevent the formation of clots, which might be difficult to find; finally, the removal of these sponges completes the toilet of the peritoneum. A string attached to each sponge keeps it within control of the operator, if it should chance to work its way beyond the reach of the finger, where its removal might otherwise necessitate abdominal section.

An opening is likewise made into the peritoneal cavity, anterior to the uterus, by tearing with the fingers or blunt instrument as before, keeping close to the uterus to avoid wounding the ureters or bladder. This part of the operation may sometimes be facilitated by passing the index finger through the posterior opening and, if possible, hooking it over the broad ligament, so that it may serve in some degree as a guide, and thereby prevent the operator from wounding the bladder, ureters, or anterior uterine wall.

The two index fingers are now introduced through this opening, and it is also enlarged by tearing laterally until it extends to the region of the broad ligament on either side. Then the index finger of the left hand, or a blunt hook,

is hooked over the left broad ligament, the ligament is drawn down and seized by hemostatic forceps, the grasp being at a sufficient distance from the uterus to prevent the instruments from slipping off after the organ has been severed.

These forceps are constructed on the principle of Péan, but should be heavier and with jaws about two inches long. These forceps which I have here are intended for the broad ligament; the handles are curved to one side in order that when the ligament retracts the handle may not be thrown to the opposite side of the vulva, where it would be an impediment to the operator in completing the operation or in subsequent manipulations. Various broad ligament clamps have been devised, but none fulfils the indication better than the simple forceps.

When the forceps are securely locked, and the handles tied together with strong thread, to prevent them from springing apart, the ligament is severed close to the uterus, and the whole uterus pulled outside. The right broad ligament is then secured in the same way, and the uterus removed by a single stroke of the scissors. Should the operator desire also to remove the ovaries and Fallopian tubes, they may be secured by separate forceps, unless they have already been included in those which grasp the broad ligaments.

If, upon examination, the operator fears that the broad ligament is diseased beyond the grasp of the forceps, he may put on other forceps back of those first applied, which latter may then be removed and the suspected tissues cut away. This proceeding involves no material loss of time; but the application of the ligature as compared with that of the forceps, would always be difficult and tedious, and sometimes unreliable, or even impossible.

In some cases of unusual enlargement of the uterus, the ligaments on either side extend so high in the pelvis, that the blunt hook does not suffice to pull them down within the grasp of a single pair of forceps. Then one pair of forceps may be put on, and that part of the ligament in their grasp

divided. The uterus can then be drawn further down, and the remaining portion of the ligament, having been clamped by a second pair of forceps, may be severed.

Sometimes a few small vessels are wounded in separating the rectum and bladder from the uterus. These should be secured by small hemostatic forceps, applied before or after the removal of the uterus, according to the amount of hemorrhage, which is usually slight, and which becomes still less when the ligaments are clamped. These small vessels are more frequently encountered in the rectal than in the vesical wall and may give considerable annoyance, especially after the uterus has been removed and the traction upon the field of operation has ceased. In one of my own cases, in which the uterus was removed without difficulty in twelve minutes, a half hour was consumed in hunting for a small bleeding point in the rectal wall, and sixteen forceps were applied before complete hemostasis was secured.

In the ligature operation it is usual, after making the anterior and posterior openings, to bring the fundus down through one of them into the vagina, the object being to twist the ligaments into a rope as it were, thus making them smaller and more accessible for the ligature. However essential this procedure may be in the ligature operation, it is unnecessary with the forceps. Moreover, it is open to a serious objection; the peritoneal cavity is thereby invaded by the diseased cervix, and may become infected with malignant or septic disease. Besides, the body of the uterus, usually larger than the cervix, is an impediment to the operator when it is brought down into the vagina. It is possible that Leopold's light mortality may in a measure be explained by the fact that he never turns the uterus. Some of the German operators, several days, or immediately before operating, curette and disinfect the interior of the uterus, in order that when the cervix is turned into the peritoneal cavity infection may be avoided. This procedure must occasion loss of blood

and materially increase the danger, and should be dispensed with if the uterus is not to be turned.

The tendency, of late, has been to leave the peritoneal wound open for drainage and to discard the drainage-tube. Advocates of the open treatment say that unless the peritoneal margins be kept apart by the discharge of fluid from the cul-de-sac into the vagina, they fall together, and in a few hours become so agglutinated as to shut off the peritoneal cavity from the vaginal part of the wound. Most operators have little or no fear of the protrusion of the abdominal or pelvic viscera through the wound. The impression has prevailed that the open treatment will become an established feature of the operation. On the other hand, Dr. P. Reichel¹ records four cases which strikingly illustrate a grave objection to the open treatment of the wound. In all four cases symptoms of intestinal obstruction followed, two or three days after the operation. In two of these cases abdominal section was performed about the seventh day. The peritoneum was found injected, recent adhesions had formed in the pelvis minor, but no fluid; a considerable part of the lower portion of the ileum was strongly inflamed, lay deep in the pelvis minor and, together with its mesentery, was there firmly adherent to the margins of the wound, and in consequence of a sharp bending upon itself at one or more points had become obstructed. After freeing the adhesions, a constriction was found in that portion of the intestine which had been adherent, and above the constricted portion the ileum was extremely dilated with its contents, in one case, to the diameter of a man's arm. Below the constriction the bowel throughout was entirely empty. All attempts to force the contents from the dilated portion of the ileum, through the stricture into the bowel below, failed. Both patients died. In the other two cases, abdominal section was not performed, but the autopsy revealed conditions identical with the two already described.

¹ Zeitschrift für Geburtshülfe und Gynäkologie, Band xv., Heft i. S. 37. "Ileus nach Totalexstirpation des Uterus."

Dr. Palmer Dudley reports a similar case¹ in which abdominal section with fatal result was performed for the relief of an ileo-vaginal fistula, which formed six months after the original operation.

Dr. Reichel insists upon careful closure of the wound as the best means of avoiding the three following accidents: 1. Protrusion of the intestine; 2. Infection of the peritoneum from the vagina; 3. Strong local peritonitis in the region of the wound with consequent adhesions and constriction of the intestine. He would cover the posterior portion of the vaginal wound after the method of Martin by union of the margins of the peritoneal and vaginal mucous membranes. For this purpose he uses a continuous catgut suture, and after the removal of the uterus would fix the stumps by suture in the angles of the wound. Then after sponging out the cul-de-sac, he would unite by suture the anterior with the posterior portion of the wound.

In two cases I have employed the hemostatic forceps, not only in hemostasis, but also in the closure of the wound, and they seem to fulfil the indications satisfactorily, although further trial will be necessary to determine their usefulness for this purpose. Closure of the wound with hemostatic forceps is effected as follows: After the uterus has been removed and all the bleeding points controlled, the forceps which clamps the broad ligament on either side is drawn down until the stump is exposed. Then the anterior and posterior peritoneal edges of the wound are approximated with a tenaculum in each hand, and fastened together at two or three points by means of light hemostatic forceps; additional forceps being applied also in each angle of the wound in such a way as to close the wound tightly around the stump, so that, if possible, that part of the ligament which is included in the grasp of the forceps shall be held down in the vaginal wound outside of the peritoneal cavity. These forceps suffice to hold the peritoneal edges of the wound in accurate coapta-

¹ New York Medical Journal, July 9, 1887.

tion until union has taken place, which occurs in a few hours unless there be fluid in the cul-de-sac, in which case the small spaces between the forceps will serve the purpose of drainage so long as drainage is necessary, and then also unite.

Thus, while union is taking place, the margins of the peritoneal wound are sufficiently immobilized to prevent the constant deviations of the rectum and bladder from disturbing the wound, and thereby contaminating it with septic infection during the healing process. A great disadvantage of the open treatment is thereby avoided. On the other hand, it is hoped that the great advantage of the open treatment, that is, drainage, will be secured by this method of closing the wound, because the forceps themselves in a surprising degree facilitate drainage. Any fluid finding its way to the little spaces between the forceps is promptly discharged along their course into the vagina.

The handles of all forceps should be tied together with strong thread to prevent them from snapping apart. The less important ones which have been applied for the purpose of securing small bleeding points, may be removed in twenty-four hours. The more important broad ligament forceps should be left forty-eight or seventy-two hours. It is possible that all might be removed in twenty-four hours with little or no danger of consequent hemorrhage. But there are two reasons for leaving them longer: 1. The wound secretions, always abundant during the first two or three days, readily find their way by continuity of surface along the track of the forceps, out through the vagina. The forceps, indeed, very effectively secure drainage. Their value as a means of drainage is scarcely secondary to their value as a means of hemostasis. Battlehner¹ shows that a solid body may be quite as good as a hollow tube for purposes of drainage. He has employed both rubber and glass tubes in vaginal hysterectomy, and has always observed that the wound secretions do

¹ *Centralblatt für Gynäkologie*, No. 42, 1885; *American Journal of Obstetrics*, 1886, p. 199.

not pass through the drainage-tube, but by the side of it. 2. The tissues grasped in the forceps are certain to slough, and this being the case, the sooner the sloughing tissue comes away the better. The longer the forceps are left, the longer the tissues will be compressed, and the more quickly they will slough. After two or three days, the tissues in their grasp will come off almost as soon as the forceps are removed, or some of them may possibly drop off without being removed at all.

The vaginal tampon of iodoform gauze as a last step in the operation, whether it be pushed into the cul-de-sac, or confined within the vagina itself, is of doubtful value. The vagina is an excellent drainage tube if left open, but the tampon impairs its efficacy as such. In one of my own cases the gauze, removed at the end of forty-eight hours, was found extremely fetid, and after its removal a quantity of offensive secretions immediately came away, which had been dammed back against the wound in consequence of the obstruction from the gauze. An antiseptic dressing may be placed over the vulva, around the handles of the forceps. Vaginal irrigation should not be practised during the first two or three days, or, if undertaken at all, should be used with extreme caution, lest fluid be forced into the abdominal cavity.

Certain difficulties which sometimes render the ligature operation exceedingly difficult and often impossible, are much more readily overcome by means of the forceps. These difficulties are encountered in cases of enlargement of the uterus, of excessive height or tenseness of the broad ligament, of small vagina, and of carcinoma having such large area that forceps have to be applied far to either side toward the pelvic wall.

In the majority of cases requiring vaginal hysterectomy, long-continued hemorrhages and anxiety of mind have already reduced nutrition, depressed vitality, and exhausted energy, all of which would powerfully contribute to profound shock and collapse, particularly if there were structural disease

of the heart or other important organs. The advantages, therefore, of the forceps operation will be apparent, inasmuch as an operation otherwise very long and tedious becomes very short and simple. Hemostasis is prompt and reliable, and the forceps, if properly applied, cannot slip off. Turning the cervix into the peritoneal cavity and bringing down the corpus uteri into the vagina, with its attendant danger, becomes unnecessary. The sloughing stump, if left in the vaginal wound below the peritoneum, comes away much more quickly under pressure forceps than under ligature. A clean granulating surface, therefore, more quickly takes the place of a gangrenous wound. Effective drainage is secured without the use of special appliances for that purpose. Convalescence, as a rule, is less complicated than when the operation is done with ligatures, sutures, drainage-tubes, and tampons. The operation certainly gives promise of reducing the mortality in carefully selected cases, to four or five per cent., possibly even less.

The following cases of vaginal hysterectomy with hemostasis by pressure forceps have recently come to my knowledge: Dr. James B. Hunter, two cases, recovered; Dr. Henry T. Byford, four cases, one death; Dr. James H. Etheridge, five cases, recovered; Dr. J. Algernon Temple, one case, recovered; Dr. E. C. Dudley, two cases, recovered. In Dr. Byford's fatal case, death occurred eighteen days after the operation; the autopsy showed no pathological condition which could account for death. The stumps were in healthy condition with no sign of sepsis or peritonitis. The patient had refused to eat and evidently died of starvation. Thus we have fourteen cases with one death, a mortality of seven per cent. In the fatal case death cannot be attributed to the operation.

This method of hemostasis will probably not be confined to simple hysterectomy. The following is quoted from a paper which I presented to the Chicago Gynecological Society, December 16, 1887:

"This operation may have a wider field than ordinary vaginal hysterectomy; I have determined in the next case I have of uterine myoma, in which supra-vaginal hysterectomy would ordinarily be performed, to open the abdomen, lift the tumor out through the abdominal wound, and then instead of using the *serre-nœud*, attempt to secure the broad ligaments by means of lock forceps in the vagina. It would probably be easy, by having the index and middle fingers in the pelvic cavity, one on each side of the broad ligament as a guide, to force the blades of the forceps through close to the uterus on either side of the ligament, to the finger-tips, and then having secured both ligaments, sever the anterior and posterior uterine attachments. The peritoneal edges of the vaginal wound might then be closed with a continuous catgut suture, or seized with lock forceps in the vagina, as already described. This method of performing hysterectomy for myoma, when the tumor is too large to be delivered through the vagina is worth trying; it would enable the operator to dispense with all extra-peritoneal methods of hemostasis, and might afford all the advantages which belong to intra-peritoneal hemostasis for ovariectomy."

Some difficulty might be experienced in those myomata which by their growth have drawn the broad ligaments high out of the pelvis into the abdominal cavity, but in such cases the operator would first grasp the forceps from the abdominal side; two forceps, a little distance from one another on each side of the uterus, should be applied to each ligament. Then each ligament should be divided with scissors between its two

¹ The New York Medical Record, December 14, 1887, publishes a report of a case of laparo-myomotomy, made to the New York Pathological Society November 23, 1887, by Dr. Mary A. Dixon Jones, in which the stump was secured in the abdominal wound by means of Kœberle's *serre-nœud* and the ordinary drainage tube introduced. The patient recovered, but was annoyed by the traction of the short pedicle upon the abdominal walls. In this report Dr. Jones suggested a modification of the operation by first liberating the vaginal wall, and then opening the abdomen and removing the entire organ; then closing the abdominal wound entirely and leaving the vaginal opening, as the most natural means of drainage. But in the above suggestion, pressure forceps, by which such a procedure would be made practicable, are not mentioned.

forceps, after which the ligament entire on either side could be grasped by one or more pairs of forceps introduced through the vagina. In many cases some enucleation and some ligatures might be required as a preparation for the successful application of the vaginal forceps.

The murderous mortality of hysterectomy for myoma has been consequent upon the great insecurity of any hitherto recognized method of intra-peritoneal hemostasis, which insecurity has necessitated the extra-peritoneal method. But the extra-peritoneal method, whether by *serre-nœud*, elastic ligature, or clamp, involves, *per se*, certain elements of danger. In proof of this we may mention the rapidly diminished mortality which followed in ovariectomy when the clamp was abandoned and the intra-peritoneal ligature substituted. If, therefore, by a safe method we could secure absolute hemostasis in myomectomy, without bringing the stump into the abdominal wound, history might repeat itself, and the mortality of hysterectomy for myoma might follow that of ovariectomy. Perhaps the solution of the whole problem may rest in the use of pressure forceps.

The use of pressure forceps for permanent hemostasis is generally credited to Richelot. The following letter from Péan was received in reply to my inquiry relative to the question of priority :

Bien cher et honoré confrère :

Vous trouverez dans les cinq volumes de *Leçons de Clinique Chirurgicale* de l'hôpital St. Louis, tous les renseignements que vous désirez au sujet du pincement préventif temporaire et définitif des vaisseaux au cours de toutes les opérations chirurgicales.

A la fin du tome I vous trouverez les leçons que j'ai faites depuis plusieurs années, et qui ont été reproduites par mes internes MM. Deny et Exchaquet.

Au tome II vous trouverez plusieurs leçons cliniques que j'ai publiées pour établir l'histoire et préciser les applications.

Dans le tome IV la deuxième et la troisième leçons sont consacrées à l'ablation de l'utérus par la voie vaginale; vous verrez, comme dans toutes mes opérations, que je pratique ce que

je tire alors du pincement des vaisseaux. Les leçons avaient été lues à l'Académie en Juillet, 1883.

Dans le même volume vous trouverez l'exposé de ma méthode appliquée à l'hystérectomie vaginale. (Aux leçons 11, 12, et 13.)

Dans le tome V, vous trouverez la réponse que j'ai faite au Congrès français de Chirurgie, au Docteur Richelot lorsqu'il a cherché à s'approprier la méthode que mes internes lui avaient communiquée, (à la page 213, 14me leçon) ainsi que les lettres du Docteur Buffet d'Elbœuf.

Les applaudissements de la salle entière ont empêché Richelot de continuer à marcher dans cette voie regrettable pour sa réputation.

En 1887, mon interne Monsieur Secheyron a eu le prix de l'Académie de Médecine de Paris pour son travail sur l'hystérectomie vaginale. Dans ce travail tous mes droits de priorité sont établis. Monsieur Richelot qui avait envoyé un travail sur le même sujet n'a eu aucune récompense.

Cette année-ci 1888, vous trouverez dans la Gazette des Hôpitaux une partie des leçons sur le morcellement et le pincement des vaisseaux que j'avais communiquée en 1873 à l'Académie de Médecine de Paris. J'y ai ajouté des figures pour mieux faire comprendre ma méthode à ceux, qui, vivant à l'étranger, comprennent moins bien le français que les descriptions ornées de figures.

Mon interne Monsieur Secheyron publie d'ailleurs actuellement un important travail sur l'hystérectomie vaginale, dans lequel vous trouverez prochainement tous les renseignements qui pourront vous intéresser sur ce sujet.

Croyez à mon entier dévouement.

(Signed)

PÉAN.

PARIS, 1 Août, 1888.

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